

## **The Information Dynamics of Vertical *Stare Decisis***

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## **The Information Dynamics of Vertical *Stare Decisis***

We propose a dynamic model of precedent in a judicial hierarchy which incorporates a “bottom-up” informational component. When a high court establishes precedents it has uncertainty regarding how these precedents will play out when applied to future legal disputes. Lower court implementation of these precedents can inform the high court about the contemporary policy implications of the precedent. If lower court usage of a precedent is informative, the high court will consider the revealed location of the precedent when contemplating reducing the precedent’s authority and applicability to future cases. Using data on U.S. Supreme Court precedents and U.S. Courts of Appeals citations to these precedents, we estimate a model of the Court’s negative treatment of precedent. We find that lower court usage of precedent can provide new, useful information on the policy content of a precedent, helping the Court shape law in a way consistent with its preferences.

Delegation is at the heart of politics. Entities endowed with policy-making authority (referred to as principals in the commonly-used principal-agent framework) typically entrust some amount of this authority, or at least the implementation of the exercise of this authority, to subordinates (the agents in this framework). Though most work on principal-agent questions examines delegation within and between the legislative and executive branches of government, there is also a substantial literature applying the principal-agent framework to judiciaries. Many of these studies assess the existence of vertical *stare decisis*, meaning they investigate the degree to which lower courts (i.e., judicial agents) follow the precedents established by higher courts (i.e., judicial principals) (e.g., Baum 1980; Luse et al. 2009; Songer, Segal, and Cameron 1994; Songer and Sheehan 1990). Other studies examine whether lower courts take into account the current policy preferences of higher courts (e.g., Haire, Songer, and Lindquist 2003; Klein 2002; Randazzo 2008; Westerland et al. 2010).<sup>1</sup> While they differ in terms of whether judicial agents look to existing policy set by a judicial principal or anticipate the future decisions of this principal, both of these research strands take a “top down” approach and are concerned with the degree to which judicial principals control judicial agents.

In contrast, we propose there is much to be gained by considering a “bottom-up” perspective and examining how the behavior of judicial agents might provide important information to a judicial principal. Specifically, we consider the following question: Can lower court usage of high court precedent inform the high court about the actual policy content or implications of a precedent and thus influence the high court’s subsequent doctrinal choices?

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<sup>1</sup> Some studies focus on both lower court implementation of precedent and the potential influence of contemporaneous high court preferences (e.g., Benesh 2002).

Instead of solely focusing on the downward movement of information in the judicial hierarchy, we explore the possibility that information about precedent also moves upwards.

We begin this paper with a brief discussion of existing approaches to understanding the operation of policy and precedent in the judicial hierarchy. We then propose a theory of precedent which incorporates an important “bottom-up” component to the flow of information. Briefly stated, we contend that when a judicial principal (high court) establishes precedents (i.e., legal policies) it has a degree of uncertainty regarding how these precedents will actually play out when applied to a variety of current and future legal disputes. The implementation of these precedents by judicial agents (lower courts) can inform the principal about the “true” nature of the precedent. Specifically, the ideological nature of the lower court judges/decisions citing a precedent can provide information to the high court about the policy content or implications of the precedent, as it is applied to contemporary disputes. The high court can then use this information to correct its body of precedent.

The extent to which these lower court citations to precedent are informative will be conditioned, though, on their frequency. Lower court usage of a precedent will be most informative of the precedent’s contemporary policy content when there is a moderate number of citations - enough to produce a meaningful signal while still allowing for a pattern of ideologically selective citation. Small numbers of lower court citations to a precedent will not provide a meaningful signal while large numbers of citations to a precedent necessarily entail citations from across the ideological spectrum of judges, which diminishes any informational signal regarding the location of the precedent. When lower court usage of a precedent is informative, the high court will consider the degree to which the revealed location of the precedent is desirable. The less desirable the location of the precedent is to the high court, the

more likely it is that this court will choose to reduce its authority and applicability to future legal disputes (i.e., treat the precedent negatively).

We test our predictions with data on more than 6,000 precedents established by the U.S. Supreme Court over nearly six decades and all U.S. Courts of Appeals citations to these precedents. We estimate a model of the Supreme Court's negative treatment of precedent and find that, conditional on the rate of appeals court citation, the Court responds to the lower courts' use of its precedents in the manner that we predict. For example, when the typical appeals court decision citing a precedent is relatively liberal, as measured by the ideological location of the median judges on the citing panels, a conservative Supreme Court will be more likely to negatively treat the precedent. Lower court use of Supreme Court precedents provides meaningful information to the Court about the actual policy consequences of these precedents, better allowing the Court to shape or reshape the state of the law by altering precedent. This result has significant implications for our understanding of precedent, judicial hierarchies, and, most generally, principal-agent relationships in politics.

### **Models of Judicial Hierarchy**

Theoretical approaches to studying judicial hierarchies typically employ a principal-agent framework in which the high court is the principal and lower courts are the agents. The high court has the ultimate policy making authority, but much of this authority is effectively delegated to lower courts as they are the first, and often only, courts to apply the legal policy to new disputes. The high court monitors these decisions and reverses them when it desires. Even with the assistance of litigants, attorneys, and organized interests (see McGuire and Caldeira 1993; Songer, Cameron, and Segal 1995), this monitoring is likely to be imperfect due to the large information asymmetry between a lower court that decides a specific case and the high court for

which this case is but one of hundreds or thousands of cases that could be reviewed. This information asymmetry, combined with lower court preferences that may not always align with those of the high court, means that lower courts may not be perfect agents of the high court and can decide cases in a way that conflicts with the policy or preferences of their judicial principal.

With this general principal-agent model underlying it, existing research on judicial hierarchies focuses on lower court compliance or high court monitoring and correction of errant decisions. While sharing a general top-down approach to understanding judicial hierarchies, extant studies can be divided into two general types of model, which we label *hierarchy without stare decisis* and *vertical stare decisis with decision correction*. Figure 1 presents a simplification of the judicial decision process in these two models.

\*\*\* Figure 1 Here \*\*\*

In the *hierarchy without stare decisis* model (decision sequence A in Figure 1), it is assumed that the judicial principal wants judicial agents to decide cases in a manner consistent with the principal's current preferences over legal/policy outcomes. The principal will monitor the agents and reverse decisions that deviate from its preferences. If these judicial agents dislike being reversed, then they will anticipate reversals and avoid them by falling in line with the high court's preferences. Note that there is no true vertical *stare decisis* in this model. Lower courts are guided by the current preferences, not the precedent, of the high court. There is the potential for agency loss, which in this context means lower courts deciding cases based on preferences that diverge from those of the high court. Numerous studies either propose or test versions of this model (e.g., Cameron, Segal, and Songer 2000; Haire, Songer, and Lindquist 2003; Klein 2002; Owens and Black. N.d.; Randazzo 2008; Westerland et al. 2010).

The *vertical stare decisis with decision correction* model (sequence B) also proposes a judicial principal-agent relationship, but does so while incorporating the norm of *stare decisis*. The high court moves first by establishing a precedent. Lower courts then confront new cases and choose whether to apply the precedent. The high court then can subsequently review and correct cases in which the precedent was improperly applied. Lower courts may generally follow high court precedent either due to the fear of being reversed by the high court or for role-theoretic reasons, though agency loss can occur when these courts fail to properly apply the precedent. Studies of lower court compliance often specify, or implicitly assume, this model (Baum 1980; Songer 1987; Songer, Segal, and Cameron 1994; Songer and Sheehan 1990).

### **A New View of Information in a Judicial Hierarchy**

While these two approaches to understanding judicial hierarchies differ as to whether it is the preferences or precedent of the high court that might constrain the decision making of lower courts, they share a few key features. Both types of model emphasize the top-down nature of these hierarchies, assume the high court wants to correct errant lower court decisions, and focus on the extent to which information about the high court's preferences or precedents flows down to the lower courts and influences their decisions. We propose a different informational theory of judicial hierarchy which we term *vertical stare decisis with precedent correction*. As represented in decision sequence C, our model of the judicial hierarchy emphasizes the importance of precedent and the uncertainty surrounding the actual consequences of precedent. The decision sequence starts with the high court setting a precedent which is then used by lower courts to resolve some disputes or at least to justify these resolutions. This lower court usage of high court precedent then provides information to the high court about the true nature or implications of the precedent which then affects whether the high court modifies the precedent.

Unlike the *hierarchy without stare decisis* model, the model we propose incorporates precedent in the form of vertical *stare decisis*. Lower courts will use high court precedent to reach or justify their decisions, but they can exhibit informationally useful ideological bias while doing so. Unlike both of the existing models of judicial hierarchy, our model emphasizes a high court's interest in correcting its precedent, instead of simply correcting lower court decisions. We will now turn to explicating *vertical stare decisis with precedent correction* in more detail. Before doing so, however, we emphasize that just as the two traditional approaches are not mutually exclusive, our model in no way precludes the possibility of these established models. It is very likely all three models capture important elements of judicial hierarchies.

Underlying our model is the relatively uncontroversial assumption that judges are motivated by their desire to shape the law in a manner consistent with their preferences regarding legal policy (e.g., Epstein and Knight 1998). High court judges want to establish precedents that ultimately lead to the legal outcomes they desire and they will have an expectation of the subsequent consequences or applications of a given legal rule. However, they will not have perfect information about the downstream effects of a legal rule. This may be particularly true as time passes by and a precedent is applied to novel, unanticipated legal questions. Put differently, the court setting the precedent cannot be sure about the true policy content of the precedent as it is not clear exactly what type of outcomes will result from or be justified by all possible applications of the precedent. Will the precedent typically lead to the outcomes the high court envisions or will it be used to justify undesirable outcomes? The judges on the high court cannot be fully confident in the answer to this question when engaging in legal rulemaking.

The consequences of a precedent set by the high court will play out in the lower courts. Evidence from the U.S. judicial system indicates that lower court judges typically comply with

high court precedent (see Songer 1987; Songer, Segal, and Cameron 1994; Songer and Sheehan 1990). But, compliance with high court precedent is not perfect, the policy preferences of lower court judges influence their decisions (Goldman 1975), and there is some room for these judges to be selective when applying precedent or using it to justify their preferred outcomes.<sup>2</sup> Lower court judges will vary in how they use high court precedent and this variation is in part a result of the ideological nature of the lower court judges and the nature of the precedent as it may apply to lower court cases. To be clear, we are not arguing that lower court usage of precedent is solely a function of the preferences of the lower court judges. All we assume is that there is an ideological component to how these judges use precedent. All else equal, judges will prefer to use or cite precedent that allows them to reach the conclusions they prefer.

Following our assumptions that a high court will not have perfect information regarding the future policy implications of a precedent, that there is an ideological component to the use of precedent, and work demonstrating the informative nature of citations to precedent, we contend that the manner in which lower courts use a precedent can help reveal the policy content of the precedent.<sup>3</sup> If a precedent, for example, is often used by conservative judges to reach conservative decisions, then this pattern reveals the conservative nature of the precedent. Lower

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<sup>2</sup> Choi and Gulati (2008) find partisan bias in appeals court citation patterns.

<sup>3</sup> Recent work emphasizes that citations to precedent provide meaningful information about the meaning, scope, and authority of the cited cases. As Cross et al. (2010, 493) note, “An opinion’s citations are the operationalization of the practice of stare decisis.” Research, for example, shows that citations can be used to measure the legal importance of Supreme Court opinions over time (Fowler et al. 2007), the ideological location of Court precedents (Clark and Lauderdale 2010), and the depreciation of precedent (Black and Spriggs 2009; Landes and Posner 1976).

court applications of a precedent can thus provide information to the high court about the actual policy content of the precedent as it is applied to contemporary disputes. A degree of ideological bias in how lower courts use a high court precedent (a form of agency loss) is useful to the high court, in the sense that this bias better informs the high court about the nature of the precedent.

To be clear, it is neither necessary nor realistic to assume that the high court will closely monitor every citation to precedent that occurs in the lower courts. Instead, we simply assume that the high court will be aware of the general patterns of precedent usage. In the U.S. context, the Supreme Court's awareness of precedent usage will be facilitated by litigants, petitioners, and amici, all of whom communicate to the Court the key components of relevant lower court decisions, including the precedent used to justify these decisions.

### **Variation in the Informational Value of Citations**

There can be a great deal of variation in the frequency with which lower courts use or cite a particular high court precedent. In the U.S. context, for example, Supreme Court precedents can generate anywhere from zero to literally thousands of lower court citations. The extent to which ideological bias in lower court usage of a precedent will inform the high court about the contemporary policy content of the precedent will depend upon how frequently the precedent is being cited in the lower courts. On the one hand, an increase in the number of lower court citations to a high court precedent allows for greater confidence about the actual location of the precedent. As sample size increases, there will be less uncertainty surrounding the location of the policy. This increase in precision occurs rapidly at first as sample size increases above one. There is then a diminishing increase in precision as sample size increases. To put this in different terms, any apparent ideological bias could simply be random noise if there are very few

instances of citation to the precedent. Noise will decrease and the underlying ideological signal will become clearer as the number of citations increases.

While increasing sample size typically leads to a more precise estimate of the quantity of interest (here, the location of the precedent), there will be a simultaneous decrease in the potential for citations to reveal ideological bias. If, for example, all lower court decisions cite a precedent in a given year, then there can be no apparent ideological bias in these citations in the sense that average citing decision would be the same as the average decision. A somewhat less extreme scenario in which a larger number of cites corresponds with them being non-informative is one in which all relevant lower court decisions in a given year cite the precedent. If the citations to a precedent are selective, however, and in part motivated by ideological considerations, then the ideological content of decisions citing the precedent should be informative regarding the location of the precedent.

Putting together these two countervailing influences on the informational content of lower court citations of precedent implies that moderate numbers of citations should cause the nature of the lower court usage of precedent to be most informative to the high court. There need to be enough cites during a period of time to have a meaningful signal of the location of the precedent. But too many citations will simply lead the location of the average citing judge/decision to collapse upon the location of the average judge/decision in the lower courts, which is not informative. Citation data support this claim, as the number of U.S. Appeals Court citations to Supreme Court precedent is a strong predictor of the distance between the location of the mean citing decision and the middle of the distribution of all appeals court decisions.<sup>4</sup>

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<sup>4</sup> Assuming that appeals court decisions reflect the preferences of the involved judges, we estimate a model in which the dependent variable is the distance between the three-year moving

Figure 2 depicts this theorized non-linear relationship between the number of citations to a precedent and the degree to which the type of decision citing the precedent will provide information about the location of the precedent. What is the citation frequency that allows for the most information regarding the location of a precedent? We have no *ex ante* theoretical expectation regarding the location of the maximum in Figure 2, but we will be able to estimate this location for the U.S. Supreme Court in the empirical section of the paper.

\*\*\* Figure 2 Here \*\*\*

### **High Court Response to Informative Citations**

What will the high court do with information about the ideological location or policy content of a precedent? A high court wants its body of precedent to reflect its preferences, broadly defined (Epstein and Knight 1998; Hansford and Spriggs 2006). When there exists a precedent that the high court finds disagreeable, it can weaken the legal status of this precedent by treating it negatively in a legal opinion. The U.S. Supreme Court, for instance, regularly opts to undercut the authority of its existing precedents through negative treatments of these precedents in its majority opinions (Hansford and Spriggs 2006). When the Court distinguishes, limits, or overrules a precedent, for example, it reduces the degree to which this precedent will

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average of the ideological location of the median judges for all the appeals court decisions that cite the precedent (see the data section below) and the overall median appeals court judge at that time. We include the log of the number of appeals court citations to the precedent during the three-year window as the independent variable in this model and it has a negative and highly significant estimate ( $t = -107$ ). This result supports our assumption that increases in citations correspond with a smaller potential for these citations to reveal a pattern of ideological bias in how the precedents are used.

apply to, influence, or justify future decisions by lower court judges. These negative treatments of Supreme Court precedent are driven, in part, by the extent to which the precedent is compatible with the preferences of the median Justice (Hansford and Spriggs 2006).<sup>5</sup>

If lower court usage of a precedent reveals that the contemporary policy content of the precedent diverges from the preferences of the high court, then the high court will consider negatively treating the precedent. For example, if lower court use of a precedent reveals that the precedent is preferred by liberal judges when deciding cases, then this should cause a conservative high court to be more likely to negatively treat the precedent. This high court treatment of the precedent will then reduce the precedent's applicability to future lower court cases and reduce the degree to which the precedent can be used to justify lower court decisions.

As argued above, the informational value of lower court citations to a precedent should vary depending upon the frequency of these citations. We therefore expect the high court to be particularly responsive to the ideological distance between itself and the lower court decisions citing the precedent when there have been a moderate number of these citations. Specifically, we expect the ideological distance between the high court and the lower courts citing the precedent to exert a positive effect on the probability of the high court treating the precedent negatively. But, this effect should be most prominent when the precedent is cited by lower courts at a moderate frequency. This positive effect may disappear at very low and high rates of citation in the lower courts, due to the decrease in the informational value of the citations.

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<sup>5</sup> Hansford and Spriggs (2006) find that the vitality of a precedent conditions the effect of the distance between a precedent and the Court on the probability of negative treatment. We contend that lower court usage of Court precedent does not alter the vitality of that precedent. It simply provides information about the location of the precedent.

In sum, we offer a twist on the typical principal-agent model of the relationship between a high court and the lower courts - lower court use of a precedent can provide new and useful information on the nature of the precedent, and this information assists the high court in its effort to shape the law in a manner consistent with its preferences. Specifically, lower court usage of a high court precedent can provide information about the policy content of the precedent as applied to contemporary legal disputes and this information affects whether the high court then diminishes the legal authority of the precedent. The degree to which lower court usage of precedent is informative will be conditioned, however, by the frequency with which the precedent is used, with moderate usage being the most informative.

Our argument also represents a modification, and we contend an improvement, on prior work seeking to explain a high court's decision to revisit or treat one of its precedents. Hansford and Spriggs (2006), for example, use the ideological distance between the coalition of Supreme Court Justices setting a precedent and subsequent Courts as a predictor of the likelihood that the Court will negatively treat a precedent. Their approach assumes that the policy content and subsequent implications of a precedent are perfectly known by the enacting coalition. Our model, in contrast, allows for uncertainty regarding the true policy content or downstream implications of a precedent. The Court's understanding of the location of the precedent can therefore change over time as a result of information flowing up from the lower courts.

### **Data and Model**

Broadly speaking, we are interested in testing the effect of lower court usage of high court precedent on whether the high court subsequently "corrects" the precedent by limiting its scope in some manner. While our theory is intended to be general to judicial hierarchies, empirical tests are necessarily specific and the high court we focus on is the U.S. Supreme Court.

Our dataset includes all orally argued Supreme Court opinions (i.e., precedents) from the 1946 Court Term through the 2003 Term ( $N = 6,680$ ). The unit of analysis is the precedent-term dyad, meaning that we have an observation for each precedent for each annual term of its existence, starting in the term after it was handed down by the Court and ending with the 2004 Term. Note that we thus make the assumption that the Court can treat any precedent in any term, which we believe to be reasonable given the Court's control of its docket and the tendency of litigants and amici to provide a wide variety of potentially applicable precedents for each case.

To avoid the possibility of lower courts responding to how the Supreme Court has treated a given precedent (see Hansford and Spriggs 2006), we only include each precedent until the year of its first treatment by the Court.<sup>6</sup> Thus, if the precedent-setting case is decided in the 1960 Term and then first treated by the Supreme Court in the 1970 Term, we have 10 observations for the precedent – one for each term from 1961 to 1970. If we continued to include the precedent in our data past the 1970 Term, it is possible that lower court usage of the precedent from that point on is affected by the Supreme Court's treatment of the precedent. In other words, it becomes less reasonable to assume that the lower court usage of the precedent is exogenous to Court treatments of the precedent after the first Court treatment. This research design yields a total of 116,629 precedent-term dyads. As further discussed below, when assessing the robustness of the

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<sup>6</sup> The average length of time it takes for the Court to treat a precedent for the first time is 8.8 terms. There are 1,737 precedents with a negative treatment before any other Court treatment of the precedent (i.e., these are the negative treatments included for Model 1.1). Overall, there are a total of 4,195 precedent-term dyads with a negative treatment at the Court during our time span (these are negative treatments included for Model 1.2).

results obtained with these data we also re-estimate the model while including all precedent-term dyads, regardless of subsequent treatments.

Our dependent variable is binary - whether the Supreme Court, in one of its majority opinions, negatively treats the precedent in the given Court term. We obtain these data from Fowler et al. (2007) and Black and Spriggs (2009), who gathered them from *Shepard's Citations*. *Shepard's* codes a majority opinion as negatively treating a precedent if there is language in the opinion that has a negative effect on the legal authority of the precedent. These codings are highly reliable (see Hansford and Spriggs 2006).

### **Model Specification**

Our hypothesis is that lower court usage of high court precedent can inform the high court about the contemporary location of the precedent (the actual effect of the precedent on law and distributional outcomes) and thus influence the high court's decision to correct its body of precedent through negatively treating the precedent in question. We contend that the ideological nature of the lower court decisions using a precedent indicates the policy content of the precedent as it is applied to contemporary disputes. The nature of these citing cases is most informative when there are a moderate amount of these citations, since low levels of usage do not allow for any confidence that the type of decision citing the precedent is anything but noise while high levels of citation will diminish the possibility of observing any ideological bias in the type of decision using the precedent.

To the extent the use of a precedent by lower courts provides information indicating the precedent is ideologically disagreeable to the high court (*Distance from Citing Decisions*), the high court should be more likely to negatively treat the precedent. The positive relationship between negative treatment and the distance between the Court and the lower court decisions

using the precedent will be conditioned by the frequency with which the precedent is being cited in the lower courts, with moderate numbers of citations leading to this ideological distance having the largest positive effect. The most straightforward way to test this hypothesis is by interacting *Distance from Citing Decisions* with a quadratic specification of the frequency with which the precedent is cited by the lower courts (*Citations*). The logit model we estimate is:

$$\Pr(\text{Negative Treatment of Precedent } p \text{ in Term } t) = f\{\beta_1(\text{Distance from Citing Decisions}) + \beta_2(\text{Distance from Citing Decisions} \times \text{Citations}) + \beta_3(\text{Distance from Citing Decisions} \times \text{Citations}^2) + x\beta_c + e\},$$

where  $x\beta_c$  is a set of control variables (including *Citations* and *Citations*<sup>2</sup>) and their associated coefficients and  $e$  is the error term.

Our expectations are that  $\beta_2$  is positive and that  $\beta_3$  is negative and that the full, conditional effect of *Distance from Citing Decisions* is positive for at least moderate levels of *Citations*. We do not have an expectation for  $\beta_1$ , since on its own this coefficient only reveals the effect of *Distance from Citing Decisions* when there are, in fact, no citations to the precedent.

## Measures

The principal independent variable for us to operationalize is *Distance from Citing Decisions*. To construct this measure we need to define both the ideological location of the Supreme Court in term  $t$  and the location of the lower court decisions citing precedent  $p$ . For the former, we simply use the Judicial Common Space (JCS) score for the median Justice on the Court in term  $t$  (Epstein et al. 2007). We measure the latter as the three-year moving average of

the median JCS score for the U.S. Appeals Court judges on panels publishing opinions that cite Supreme Court precedent *p*.

This latter measure needs a good deal of unpacking. We begin by using Fowler et al.'s (2007) and Black and Spriggs' (2009) data to identify the 276,981 U.S. Appeals Court decisions that, according to *Shepard's Citations*, cite one of the Supreme Court precedents in our data (for a total of 978,683 citations to Supreme Court precedent).<sup>7</sup> We then identify the judges involved in each of these cases and match them with their JCS scores, which measure their ideological locations in the same space as the justices (see Epstein et al. 2007; Giles, Hettinger, and Peppers 2001).<sup>8</sup> Guided by the assumption that appeals court decisions will to some degree reflect the

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<sup>7</sup> This includes all the appeals court decisions from the numbered circuits and from the D.C. Circuit Court. We do not include appeals court citations to Supreme Court precedent that are coded as negative treatments by *Shepard's* (which are very infrequent). Negative treatments in the lower courts do not provide clear information about the location of the precedent since they can result from a precedent being either far to the right or left of the median judge.

<sup>8</sup> District court judges, retired justices, and judges on specialized federal courts sometimes serve on appeals court panels. JCS scores for district court judges were obtained from Boyd (2010). For retired justices, we use the JCS score for the justice's final term on the Supreme Court. For specialized jurisdiction judges, we use the Common Space score for the appointing president. For the rare cases in which fewer than two judges can be identified as participating in a case, we use the median judge for the circuit as a proxy for the median member of the panel.

ideological leanings of the involved judges, we use the median member of the appeals court panel as the measure of the ideological nature of the panel's decision.<sup>9</sup>

For each Supreme Court precedent in our data, we are then able to calculate the mean of these panel medians for all the appeals court cases that cited the precedent in the three years preceding the Court term under analysis.<sup>10</sup> The final step was to aggregate these means into

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<sup>9</sup> *Shepard's* makes a distinction between citations to precedent and the explicit following of precedent. Here, we treat cites and follows as being equivalent. Like Clark and Lauderdale (2010), we thus err on the side of considering all citations informative. In part, this decision is based on *Shepard's* fairly restrictive coding rules that almost certainly undercount "follows." Nonetheless, it could be the case that the decisions explicitly following a precedent are more informative than decisions that simply cite the precedent. To assess whether considering the following of precedent and the citing of precedent in the same manner has implications for the inferences we ultimately make, we weight more heavily all the instances in which an appeals court panel follows a precedent (per *Shepard's Citations*) when calculating the mean panel median for appeals court decisions citing/following a Court precedent. Lacking theoretical guidance as to the size of this weight, we determine it by the observed ratio of "follows" to "cites" in the data and weight each "follow" by a factor of eight when constructing the mean judge citing/following a precedent. We then use this revised measure to construct a new version of the *Distance from Citing Decisions* and re-estimate Model 1.1. The results of this model estimation are very similar to those presented in Table 1 (Supporting Information, Table SI.1).

<sup>10</sup> Given that that Supreme Court terms do not start until October and the great preponderance of the majority opinions are not written or published until the next calendar year, we use, for example, lower court usage of precedent in the 1998, 1999, and 2000 calendar years to construct

three-year moving averages (for the three years preceding the Court term under analysis). To generate *Distance from Citing Decisions*, we take the absolute value of the difference between the JCS score for the median Justice on the Court in term  $t$  and the three-year moving average of the mean median judge on panels that cited the precedent.

The key conditioning variable is *Citations*, which is measured as the number of appeals court decisions citing precedent  $p$  over the three years leading up to the term under analysis.<sup>11</sup> As explained above, *Citations* and *Citations*<sup>2</sup> are then multiplied with *Distance from Citing Decisions*. *Citations* and *Citations*<sup>2</sup> are also included separately as constituent terms in the model, though we have no theoretical expectations for their coefficients.<sup>12</sup>

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*Distance from Citing Decisions* for the 2000 Term. If a precedent has not been cited by an appeals court in the three years prior to term  $t$  then the location of the precedent is set at zero, which is the center of the JCS scale. The mean value for our citation-based measure of the location of a precedent is -.003, which is very close to the center of the scale.

<sup>11</sup> Again, we do not include negative treatments by the appeals courts as citations. The mean value of *Citations* for a precedent-year dyad is 8.0.

<sup>12</sup> The variance of the ideological location of citing decisions could be viewed as an attractive alternative to *Citations* as a measure of the informational value of the citation-based measure of the current policy content of a precedent. The magnitude of the variance in the location of citing decisions is insensitive to sample size, though, in the sense that moving from two citations to thirty citations does not decrease this variance, all else equal. Nonetheless, we estimate an alternative version of Model 1.1 in which we also include *Distance from Citing Decisions*  $\times$   $\sigma_{Citing Decisions}$ . The estimate for this interaction term is in the expected direction (negative) and is

We also include a host of control variables in our model. While the central theoretical argument we make in this paper is that a high court can learn about the contemporary policy content of a precedent by observing ideological bias in the types of lower court decisions citing the precedent, the high court likely also has a prior belief about the location of the precedent. We therefore include *Distance from Precedent Setting Coalition* in our model and measure it as the absolute value of the difference between the median justice in the majority coalition that set the precedent and the median justice on the Court in term  $t$ .<sup>13</sup> Again, we use JCS scores to measure the ideological location of the Justices.

We also include in our model several characteristics of the precedent that might affect whether a precedent is treated negatively by the Supreme Court (see Hansford and Spriggs 2006).<sup>14</sup> *Constitutional Precedent* equals one if the precedent involved an interpretation of the U.S. Constitution (from Spaeth 2007). We measure *Precedent Breadth* as the number of legal issues and legal provisions involved in a case, as found in Spaeth's (2007) "Issue" and "Law" variables, respectively. *Precedent Vote Margin* equals the number of justices in the majority minus the number of dissenters in the precedent-setting case (from Spaeth 2007). *Per Curiam* equals one if the precedent-setting opinion was unsigned and zero otherwise, as taken from

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statistically significant. Its inclusion in the model has little effect on the substantive inferences regarding the other variables of interest. See Model SI.3 in the Supplemental Information.

<sup>13</sup> Clark and Lauderdale (2010) find that the median justice in the precedent-setting majority has the most influence over the content of the precedent.

<sup>14</sup> We cannot include in this model the legal vitality of a precedent - as measured by the Supreme Court's subsequent treatment of a precedent (see Hansford and Spriggs 2006) - because we censor our data after a precedent's first treatment by the Court.

Spaeth (2007). We capture the salience of the precedent at the time it was decided by the number of amicus curiae briefs filed on the merits. Since the volume of briefs increases over time, we create a term-standardized measure (*Precedent Amici*) consisting of the number of standard deviations above or below the mean amicus brief filings in all cases for a term. To control for changes in the Court’s docket over the time period analyzed, we include *Agenda Relevance* and measure it as the number of cases in Term  $t$  that deal with the same general issue that was central to the precedent.<sup>15</sup>

To account for potential duration dependence, we include the age of the precedent in the model. Experimentation reveals that the best specification is to include the natural log of the age of the precedent in term  $t$ :  $\ln(\text{Precedent Age})$ . With the issue of non-independent residuals in mind, we also estimate robust standard errors that allow for clustering on the precedents. We also include fixed effects for the decade in which the precedent was decided by the Court. By including these fixed effects we simultaneously address potential temporal heterogeneity and the possibility of informative censoring (that there may be different baseline probabilities of negative treatment for the precedents more likely to be censored by the 2004 Term endpoint in our data).

## Results

The results of our logit model of the negative treatment of Supreme Court precedent are presented in the Model 1.1 column of Table 1. We expect *Distance from Citing Decisions* to increase the probability of the Supreme Court negatively treating one of its precedents, with the informational content of the type of lower court decision citing the precedent peaking when there are a moderate number of lower court citations to the precedent. The coefficient estimates for  $\text{Distance from Citing Decisions} \times \text{Citations}$  and  $\text{Distance from Citing Decisions} \times \text{Citations}^2$  are

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<sup>15</sup> We use Spaeth’s (2007) “Value” variable to define general legal issue areas.

fully consistent with this expectation, as there is a positive, statistically significant estimate for the former variable and a negative, statistically significant estimate for the latter. The estimate for the *Distance from Citing Decisions* constituent term is not statistically significant, which is not surprising as this estimate reveals the effect of *Distance from Citing Decisions* when there have not actually been any lower court citations in the previous three years.

\*\*\* Table 1 Here \*\*\*

To illustrate the conditional effect of *Distance from Citing Decisions*, Figure 3 plots the conditional coefficient for this variable over a wide range of values for the conditioning variable – *Citations*.<sup>16</sup> The solid line contains the point estimates for the effect of *Distance from Citing Decisions* on the probability of a precedent being treated negatively, conditional on the average number of Appeals Court citations to the precedent over the previous three years.<sup>17</sup> The shaded region depicts the 95% confidence intervals around these conditional point estimates.<sup>18</sup>

\*\*\* Figure 3 Here \*\*\*

As revealed by this figure, the conditional effect of *Distance from Citing Decisions* on the probability of a precedent being negatively treated by the Supreme Court is positive for almost all of this range of *Citations*. Moreover, the 95% confidence interval does not include zero when the average number of citations to the precedent ranges between 13 and 93.<sup>19</sup> This result supports our hypothesis that at moderate levels of lower court citation the manner in which

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<sup>16</sup> The conditional effect/coefficient is:  $-.514 + .091(\text{Citations}) - .0007(\text{Citations}^2)$ .

<sup>17</sup> We vary *Citations* from its minimum value to 100, which is the relevant range for the vast majority (99.3%) of the observations in our data.

<sup>18</sup> See Brambor, Clark, and Golder's (2006) guide to conditional coefficients and standard errors.

<sup>19</sup> 43,739 (37.5%) of the precedent-dyads fall in this range of *Citations*.

lower courts use the precedent (as measured by the ideological nature of the lower court judges citing the precedent) provides information to the Court about the location of the precedent and thus influences the Court's decision to weaken the precedent. When there are enough citations to a precedent to ensure that the mean ideological position of the decisions citing the precedent is meaningful, but not so many citations that the mean location of citing decisions will begin to approach the center of the distribution of all appeals court decisions, then the ideological position of the typical citing decision provides information to the Court about the policy content of the precedent as it is applied to contemporary disputes. If this information reveals that the precedent is at odds with the current Court, then the Court will be more likely to weaken the precedent.

*Distance from Citing Decisions* has its greatest effect when there are 79 Citations. Higher values of Citations then decrease the effect of *Distance from Citing Decisions*. While there are not many precedents that are cited more than 79 times in the appeals courts, it is also not a trivial number. There are 1,585 precedent-term dyads experiencing more than 79 Citations.

While the informational byproduct of lower court usage of high court precedent is the focus of this paper, our model (Model 1.1) of the Court's negative treatment of precedent also includes a number of controls which we will briefly discuss. *Distance from Precedent Setting Coalition* has a positive and significant coefficient estimate. The greater the ideological disparity between the Supreme Court in Term  $t$  and the justices who established the precedent, the more likely the Court is to weaken the precedent. This result is consistent with prior research on the negative treatment of precedent (Hansford and Spriggs 2006) and suggests that the Court's prior belief about the location of a precedent affects its decision to weaken it.

To compare the effect size of *Distance from Precedent Setting Coalition* with that of *Distance from Citing Decisions*, Figure 4 plots four sets of predicted probabilities of negative

treatment. One set (the solid line) contains the probabilities of negative treatment predicted when *Distance from Precedent Setting Coalition* ranges from its minimum to slightly more than its maximum value.<sup>20</sup> The other three sets contain the probabilities of negative treatment predicted when *Distance from Citing Decisions* ranges from its minimum to slightly less than maximum value. For these three curves, *Citations* is set at 8 (mean), 31 (one standard deviation above), and 54 (two standard deviations above).<sup>21</sup>

\*\*\* Figure 4 Here \*\*\*

This figure reveals that *Distance from Citing Decisions* has a larger effect size than *Distance from Precedent Setting Coalition* when *Citations* is set at two standard deviations above its mean. The substantive implication of this result is that when lower courts are citing precedent at a particularly informative rate the type of judge citing the precedent has a bigger effect on whether the Court treats that precedent negatively than the type of justice who established the precedent. Prior work on the treatment of precedent at the Supreme Court (e.g., Hansford and Spriggs 2006) focuses only on the distance between the Court in Term *t* and the precedent-setting coalition. Our results indicate that under certain conditions the lower court usage of the precedent can have at least as big an effect on negative treatments by the Court.

The results for the other control variables in Model 1.1 also reveal that constitutional precedents, broader precedents, and precedents decided by smaller vote margins are more likely to receive negative treatment. Per curiam precedents are less likely to be weakened by the Court.

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<sup>20</sup> *Citations* is set to 54 for this set of predictions to make them comparable to the most pronounced curve for *Distance from Citing Decisions*.

<sup>21</sup> All the predicted probabilities are for a five-year old, constitutional precedent established by a minimum winning coalition. All other independent variables are held at their means.

Cases that drew a lot of amicus curiae briefs and that dealt with legal issues that remain active on the Court's docket in Term  $t$  are more likely to be treated negatively. As a precedent ages, it becomes less likely to receive this type of treatment, all else equal.

### **Revisiting the Decision to Censor the Precedent-Term Dyads at First Treatment**

Perhaps the most important model specification choice we make is to exclude all precedent-term dyads occurring after the Supreme Court has treated a precedent negatively or positively. We do this to avoid the possibility that the Court's treatment of its precedent could affect lower court usage of precedent, which might introduce endogeneity into our model. Nonetheless, in an effort to assess the robustness of the results of Model 1.1 we also estimate the model while including all precedent-term dyads through the end of the 2004 Court Term. This increases the total number of precedent-term dyads to 200,710. To account for the potential influence of prior treatments by the Court, we add two additional control variables to this model: *Prior Negative Treatments* and *Prior Positive Treatments*. The former is the number of previous terms in which the Court treated the precedent in a negative manner and the latter is the number of prior terms with positive treatments of the precedent.<sup>22</sup> The results of this estimation are displayed as Model 1.2 in Table 1. The key results remain the same when these additional dyads are included. The estimates for *Distance from Citing Decisions*  $\times$  *Citations* and *Distance from*

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<sup>22</sup> This is a parsimonious effort to control for a precedent's treatment history at the Court. An alternative approach is to include the difference between *Prior Positive Treatments* and *Prior Negative Treatments* and a multiplicative term involving this difference and *Distance from Precedent Setting Coalition* (see Hansford and Spriggs 2006). With this approach, the inferences for *Distance from Citing Decisions*  $\times$  *Citations* and *Distance from Citing Decisions*  $\times$  *Citations*<sup>2</sup> remain the same (Supporting Information, Table SI.2).

*Citing Decisions*  $\times$  *Citations*<sup>2</sup> are again in the predicted direction and statistically significant. It does not appear that the exclusion of the post-treatment dyads determines our results.

### **Conclusion**

Studies of the delegation of policy-making authority typically focus on the extent to which the agents comply with the directives of the principal. When applying the principal-agent framework to judicial hierarchies, scholars forward models in which the high court is concerned with correcting errant lower court decisions, which might in turn make lower courts more likely to comply with either the high court's preferences or precedent. In contrast, we put forward a new view of judicial hierarchy in which the high court observes how lower courts use a precedent and relies on information from this lower court behavior to gain a better sense of the precedent's policy content as it is applied to current disputes. If this information reveals that the precedent is at odds with the high court's preferences, then the high court corrects its body of precedent by weakening the offending precedent. Our analysis of the U.S. Supreme Court's response to appeals court citations to its precedent provides support for our view of the information flow and policy making in a judicial hierarchy.

This result yields three central implications, the most general of which is that agency loss can provide a useful informational byproduct to the principal. Principal-agent models of delegation tend to focus on the obvious costs of agents not fully implementing the policies or preferences of the principal. Thus, political scientists theorize about the mechanisms that can minimize agency loss in various policy-making contexts. Our result, however, suggests there can be an informational silver lining to the dark cloud of agency loss. To the extent that a preference-based selection effect in the type of agent that chooses to implement a policy constitutes a form of agency loss, this type of loss can inform the principal about the current

nature of the policy. The principal can then use this information to decide whether to alter the policy in question, which in the context of our study is a legal precedent.

Second, studies of Supreme Court decision making tend to assume implicitly that the justices have perfect information about the actual consequences of their decisions. To the extent that they do not have perfect ex ante information about the consequences of policies they could adopt, scholars point to experienced attorneys (McGuire 1995), oral argument (Johnson, Wahlbeck, and Spriggs 2006), and amicus curiae briefs (Collins 2008) as sources of information. This paper provides evidence for another important source of information regarding the nature of existing precedents - the lower federal courts. Our findings thus suggest that lower courts may play an even more significant role in the judicial system than generally has been acknowledged. Certainly, scholars long have recognized that particularly in the modern federal system most lower court decisions are left undisturbed, implying that these courts have the last word on the vast majority of legal disputes in this jurisdiction. Our study, though, suggests that those courts can also have an unintentional informational influence on the Supreme Court and the evolution of its legal doctrine (see also Corley, Collins, and Calvin 2011).

Finally, prior work on the Supreme Court's treatment of its existing precedents shows that these treatments affect how lower courts then use the precedents (Benesh and Reddick 2002; Hansford and Spriggs 2006). Our study reveals the causal arrow does not just point in this one direction. The treatment of a precedent by the Court can be influenced by how the lower courts have used the precedent. The U.S. federal judicial hierarchy thus manifests an interesting informational dynamic, with Supreme Court precedents informing lower courts how to resolve legal questions and lower court use of these precedents revealing additional information about their actual policy content or legal consequence as they are applied to new factual circumstances.

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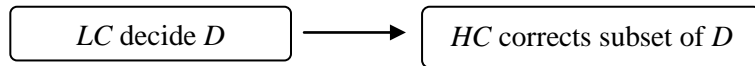
**Table 1. Logit model of the negative treatment of precedent at the Supreme Court**

Independent Variable	Model 1.1 (censoring at first treatment)	Model 1.2 (censoring only at 2004 Term)
Distance from Citing Decisions	-.514 (.269)	-.894 <sup>^</sup> (.183)
Distance from Citing Decisions × Citations	.091* (.027)	.064* (.014)
Distance from Citing Decisions × Citations <sup>2</sup>	-.0007* (.0003)	-.0002* (.0001)
Citations	.023 <sup>^</sup> (.005)	.009 <sup>^</sup> (.002)
Citations <sup>2</sup>	-.0001 (.0000)	-.000 (.000)
Distance from Precedent Setting Coalition	1.44 <sup>^</sup> (.168)	.954 <sup>^</sup> (.116)
Constitutional Precedent	.615 <sup>^</sup> (.053)	.580 <sup>^</sup> (.039)
Precedent Breadth	.129 <sup>^</sup> (.028)	.120 <sup>^</sup> (.018)
Precedent Vote Margin	-.020 <sup>^</sup> (.009)	-.014 <sup>^</sup> (.006)
Per Curiam Precedent	-.755 <sup>^</sup> (.138)	-.731 <sup>^</sup> (.120)
Precedent Amici	.188 <sup>^</sup> (.019)	.149 <sup>^</sup> (.012)
Agenda Relevance	.013 <sup>^</sup> (.002)	.014 <sup>^</sup> (.002)
ln(Precedent Age)	-.651 <sup>^</sup> (.023)	-.645 <sup>^</sup> (.018)
Prior Negative Treatment	---	.213 <sup>^</sup> (.020)
Prior Positive Treatment	---	.063 <sup>^</sup> (.023)
N	116,629	200,710
Wald Test Statistic (19/21 d.f.)	2,076*	3,776*

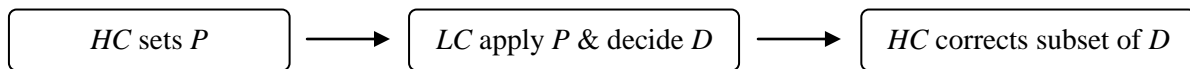
Entries are logit coefficient estimates (and robust standard errors). Fixed effects for the decade the precedent was decided are also included in these models. \*  $p \leq .05$  (one-tailed, for directional hypotheses). <sup>^</sup>  $p \leq .05$  (two-tailed, for control variables).

**Figure 1. Decision sequences in models of judicial hierarchy**

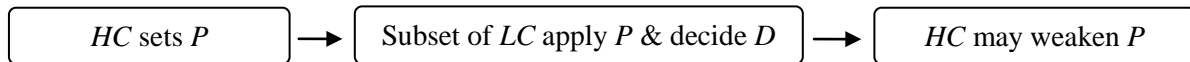
*A. Hierarchy without Stare Decisis*



*B. Vertical Stare Decisis with Decision Correction*

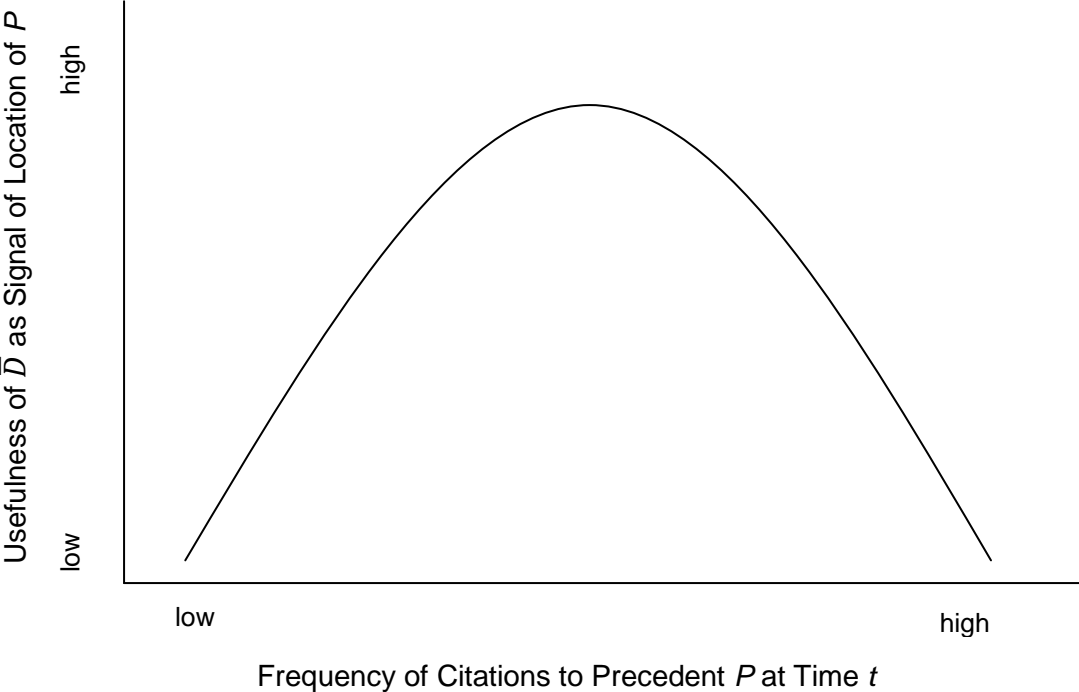


*C. Vertical Stare Decisis with Precedent Correction*



Note: *HC* is a high court, *P* is a precedent, *LC* is the set of lower courts, and *D* are the set of lower court decisions.

**Figure 2. Informational value of lower court citations**



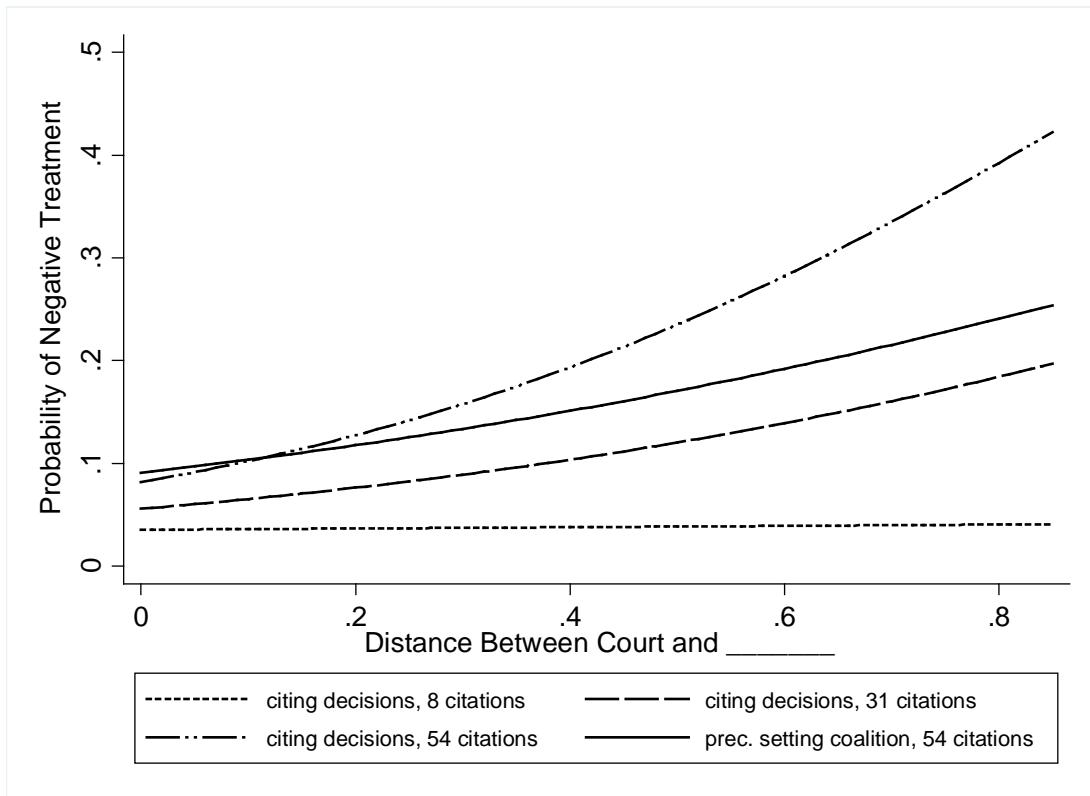
Note:  $\bar{D}$  is the location of the mean citing lower court decision in policy space.

**Figure 3. Conditional effect of *Distance from Citing Decisions* on the probability of a precedent being negatively treated by the Supreme Court**



Note: The coefficient estimate for *Distance from Citing Decisions* is plotted on the *y*-axis and *Citations* is plotted on the *x*-axis.

**Figure 4. Predicted probabilities of negative treatment**



Note: Predicted probabilities of negative treatment are generated by Model 1.1. Probabilities are for a five-year old constitutional precedent established by a minimum winning coalition. For the three dashed lines, *Distance from Citing Decisions* is plotted on the *x*-axis and varies from its minimum to near-maximum value found in the data. For the solid line, *Distance from Precedent Setting Coalition* is plotted on the *x*-axis and varies from its minimum to a value slightly beyond the maximum found in the data. *Citations*, the conditioning variable, varies from its mean (8) to one (31) and two (54) standard deviations above its mean, as indicated in the legend. All other independent variables are held at their means (or modes for binary variables).

**The Information Dynamics of Vertical *Stare Decisis***

**\*\*\* Supplementary Information \*\*\***

**Table SI.1. Logit model of the negative treatment of precedent at the Supreme Court, with weightings for type of lower court usage of precedent**

Independent Variable	Coefficient	Robust Standard Error
Distance from Citing Decisions	-.431	(.234)
Distance from Citing Decisions × Citations	.043*	(.011)
Distance from Citing Decisions × Citations <sup>2</sup>	-.0002*	(.0001)
Citations	.012 <sup>^</sup>	(.002)
Citations <sup>2</sup>	-.0000 <sup>^</sup>	(.0000)
Distance from Precedent Setting Coalition	1.46 <sup>^</sup>	(.168)
Constitutional Precedent	.634 <sup>^</sup>	(.053)
Precedent Breadth	.135 <sup>^</sup>	(.028)
Precedent Vote Margin	-.019 <sup>^</sup>	(.009)
Per Curiam Precedent	-.764 <sup>^</sup>	(.138)
Precedent Amici	.185 <sup>^</sup>	(.019)
Agenda Relevance	.014 <sup>^</sup>	(.002)
ln(Precedent Age)	-.628 <sup>^</sup>	(.023)
N		116,629
Wald Test Statistic (19 d.f.)		2,145*

Note: To assess whether our decision to treat the “following” of precedent and the “citing” of precedent in the same manner has implications for the inferences we ultimately make, here we weight more heavily all the instances in which an appeals court panel “follows” a precedent (per *Shepard’s Citations*) when calculating the mean panel median for appeals court decisions citing/following a Court precedent and the number of citations. Guided by the observed relative scarcity of “follows” as compared to “cites” in the data, we weight each “follow” by a factor of eight when constructing the mean judge citing/following a precedent. We then use this revised measure to construct new versions of the independent variables derived from appeals court usage of precedent (*Distance from Citing Decisions*, *Citations*, *Citations*<sup>2</sup>, and their interactions) and re-estimate Model 1.1. Fixed effects for the decade the precedent was decided are also included in these models. \*  $p \leq .05$  (one-tailed, for directional hypotheses). <sup>^</sup>  $p \leq .05$  (two-tailed, for control variables).

**Table SI.2 Logit model of the negative treatment of precedent at the Supreme Court, censoring only at 2004 Term and employing an alternative control for previous Supreme Court treatments**

Independent Variable	Coefficient	Robust Standard Error
Distance from Citing Decisions	-.949 <sup>^</sup>	(.187)
Distance from Citing Decisions × Citations	.062*	(.015)
Distance from Citing Decisions × Citations <sup>2</sup>	-.0002*	(.001)
Citations	.012 <sup>^</sup>	(.002)
Citations <sup>2</sup>	-.0000	(.0000)
Distance from Precedent Setting Coalition	1.03 <sup>^</sup>	(.123)
Constitutional Precedent	.661 <sup>^</sup>	(.041)
Precedent Breadth	.136 <sup>^</sup>	(.020)
Precedent Vote Margin	-.015 <sup>^</sup>	(.007)
Per Curiam Precedent	-.763 <sup>^</sup>	(.126)
Precedent Amici	.173 <sup>^</sup>	(.013)
Agenda Relevance	.012 <sup>^</sup>	(.002)
ln(Precedent Age)	-.561 <sup>^</sup>	(.017)
(Prior Positive Treatment - Prior Negative Treatment)	-.146 <sup>^</sup>	(.042)
(Prior Positive Treatment - Prior Negative Treatment) × Distance from Precedent Setting Coalition	.136	(.117)
N		200,710
Wald Test Statistic (21 d.f.)		3,313*

Note: Here we employ an alternative approach to controlling for prior Supreme Court treatment of precedent than that used for Model 1.2 in Table 1. We include the difference between *Prior Positive Treatments* and *Prior Negative Treatments* and a multiplicative term involving this difference and *Distance from Precedent Setting Coalition* (see Hansford and Spriggs 2006). Fixed effects for the decade the precedent was decided are also included in these models. \*  $p \leq .05$  (one-tailed, for directional hypotheses). <sup>^</sup>  $p \leq .05$  (two-tailed, for control variables).

**Table SI.3. Logit model of the negative treatment of precedent at the Supreme Court, including standard deviation of citing decisions**

Independent Variable	Coefficient	Robust Standard Error
Distance from Citing Decisions	.412	(.310)
Distance from Citing Decisions $\times$ Citations	.091*	(.027)
Distance from Citing Decisions $\times$ Citations <sup>2</sup>	-.001*	(.000)
Distance from Citing Decisions $\times$ $\sigma_{\text{Citing Decisions}}$	-4.94*	(1.66)
Citations	.019^	(.004)
Citations <sup>2</sup>	-.0000	(.0000)
$\sigma_{\text{Citing Decisions}}$	2.47^	.315
Distance from Precedent Setting Coalition	1.40^	(.168)
Constitutional Precedent	.632^	(.053)
Precedent Breadth	.120^	(.028)
Precedent Vote Margin	-.019^	(.009)
Per Curiam Precedent	-.620^	(.138)
Precedent Amici	.186^	(.020)
Agenda Relevance	.013^	(.002)
ln(Precedent Age)	-.658^	(.024)
N		116,629
Wald Test Statistic (21 d.f.)		2,080*

Note: To test whether variation in the ideological nature of the appeals court decisions citing the precedent conditions the effect of *Distance from Citing Decisions*, here we add  $\sigma_{\text{Citing Decisions}}$  and *Distance from Citing Decisions*  $\times$   $\sigma_{\text{Citing Decisions}}$  to Model 1.1.  $\sigma_{\text{Citing Decisions}}$  is measured as the standard deviation of the Judicial Common Space scores of the median judges on the panels citing the precedent during the previous three years. Fixed effects for the decade the precedent was decided are also included in these models. \*  $p \leq .05$  (one-tailed, for directional hypotheses). ^  $p \leq .05$  (two-tailed, for control variables).